IDAHO
DEPARTMENT OF FISH & GAME.

Jerry M. Conley, Director

MACKAY HATCHERY

Annual Report

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MACKAY HATCHERY ABSTRACT

Mackay Hatchery services the Big Lost River drainage, Little Lost River drainage, Birch Creek, and most of the upper Salmon River drainage. Henry's Lake, Island Park Reservoir, Cascade Reservoir, Ririe Reservoir, and certain north Idaho lakes also receive fish from Mackay Hatchery. Some 60 — 90 high mountain lakes per season are also planted from Mackay.

1981-82 was the second consecutive exceptionally good production year and we produced 129,241 pounds of fish. Species produced were rainbow, cutthroat, brook, brown trout, and fall chinook salmon. No rainbow have been held over for production. Large numbers (1,778,070) of cutthroat were reared at Mackay this year. A feed conversion ratio of 1.50 was achieved from 195,100 pounds of feed fed.

External parasites are ever present, and we did treat small fingerlings inside the hatchery for Costia. Few losses were experienced, however.

Most waters serviced by Mackay Hatchery received allocated numbers of fish. The upper Salmon River, due to high water delay in planting in spring and early summer, received some less numbers of fish than usual. These fish were diverted mostly to Island Park and Ririe reservoirs. Some surplus fish were also diverted to other reservoirs such as Salmon Falls.

Water inlets to hatchery vats have been revamped to allow for better aeration. Chimneys were put into houses #1 and #3 for wood stoves. Wood stoves were also purchased. A new electrical box and switch was installed for the lawn irrigation system. New, safer, and more-efficient lids were installed on the one-ton truck fish tank. A new revolving screen was purchased for the large raceways.

Usual numbers of visitors visited the hatchery; not as many as in more-populated areas, but considerably more than the previous year.

Author:

Robert L. Vaughn
Fish Hatchery Superintendent II

OBJECTIVES

The objectives of the Mackay Hatchery are to:

1. Hatch and rear 100,000 pounds of fish for planting in the service area lakes and streams. These included 108,148 pounds - 520,066 rainbow trout; 12,854 pounds - 1,778,070 cutthroat trout; 258 pounds - 20,845 brook trout; 4,655 pounds - 517,700 brown trout; and 3,325 pounds - 428,897 fall chinook salmon.

2. Release catchable and fingerling fish in all allocated lakes and streams in the area and other specified locations in the state.

3. Rear and plant fish in the high lakes in areas 3, 4, and 6. These, with a few exceptions, are planted by helicopter.

4. A special objective of the hatchery this year was to rear and plant a large number of fingerling cutthroat trout in Henry's Lake. Some 1,778,070 3-4" fingerlings were planted.

INTRODUCTION

Mackay Hatchery is located 16 miles west-southwest of Mackay and 43 miles south of Challis. It is a high altitude station, 6,200 feet above sea level at the hatchery site.

The hatchery receives its water from a large spring area located on the hatchery grounds. We receive and use approximately 22 cubic feet per second of water which is low in dissolved oxygen. Water enters the raceways at a maximum of five parts per million dissolved oxygen. Water entering the hatchery is somewhat lower, approximately 4.5 ppm. Water introduction to the vats has been revised by the hatchery crew this fall, hopefully bringing the dissolved oxygen up at least one part per million.

The physical features at the Mackay Hatchery are:

Three permanent employees;
One office and feed storage building;
One hatchery building housing ten double-stacks of Heath incubator trays and thirty plastic vats for rearing fry and fingerlings;
Eight small raceways 100' x 3' x 24";
Eight long raceways - 400' x 8' x 32";
Three permanent employee residences;
One four-stall garage building;
One two-stall garage building adjacent to house #2;
One spring area with domestic spring water supply covered.

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Mackay Hatchery services the Big Lost River drainage, Little Lost River drainage, Birch Creek, and most of the upper Salmon River drainage. Henry's Lake, Island Park Reservoir, Cascade Reservoir, Ririe Reservoir, and certain north Idaho lakes also receive fish from Mackay Hatchery. Some 60-90 high mountain lakes per season are also planted from Mackay.

FISH PRODUCTION

Fish eggs received at the hatchery were:

Rainbow trout	253,440
Fall chinook salmon	714,328
Brown trout	859,652
Brook trout	39,192
Cutthroat trout	2,178,586
Total:	4,045,198

The rainbow eggs were received at Mackay on 29 March 1982. These were purchased from Aqua-Life Corporation and were delivered to the hatchery by Aqua-Life personnel in good condition.

The fall chinook eggs were delivered to Mackay by a van driven by Bill Hutchinson on 30 October 1981. The 433,600 eggs from Spring Creek Hatchery arrived in a very soft-shelled condition. Considerable mortality was experienced by this group. The 280,728 eggs from the Bonneville Hatchery were nice-looking eggs.

Brown trout eggs (612,724) were received from North Attleboro, Massachusetts, National Fish Hatchery. Egg cases broke down during shipment causing some trauma to the eggs. These were received at Mackay on 25 November 1981. In addition, 246,928 brown trout eggs were received at Mackay on 9 December 1981 from Plymouth Rock, Massachusetts. These were nice-looking eggs upon arrival. Some mortality was experienced in them later, however. We at the hatchery thought the Attleboro fish were the better of the two in the final analysis.

On 16 December 1981 13,920 Assinica Lake and 25,272 Temiscamie brook trout arrived at the hatchery. All of these eggs arrived at 60° F with no ice in the cases; also two different age groups, approximately ten days apart, were combined together for shipment. These factors created conditions for considerable mortalities. More care should be exercised by Cornell University for shipping to Mackay.

These brook trout are of a particular strain for Henry's Lake, supposedly being larger and longer-lived fish.

A special objective of the hatchery this year was to rear and plant a large number of fingerling cutthroat trout in Henry's Lake. Between 8 April and 30 April 1982, we received 2,113,642 cutthroat trout eggs from Henry's Lake and later planted 1,778,070 3-4" fingerlings back into the lake. The fish were all terramycin marked, which involved feeding terramycin-impregnated feed for two weeks. An additional 64,944 Henry's Lake cutthroat trout eggs were received on 22 June 1982 for the high mountain lakes. These were purposely ordered late to maintain a small size for putting in plastic bags for helicopter planting.

The pounds of fish produced by species were:

Species	Size (inches)	Pounds
Rainbow trout	6" or larger	105,733.00
Rainbow trout	0-3"	2,388.50
Rainbow trout	3-6"	27.00
Fall chinook salmon	0-3"	3,325.00
Brown trout	0-3"	4,655.00
Brook trout	0-3"	258.00
Cutthroat trout	0-3"	12,854.27
	Total:	129,240.77

Numbers of fish produced by species were:

Species	Size (inches)	Pounds
Rainbow trout	6" or larger	274,050
Rainbow trout	0-3"	246,016
Rainbow trout	3-6"	419
Fall chinook salmon	0-3"	428,897
Brown trout	0-3"	517,700
Brook trout	0-3"	20,845
Cutthroat trout	0-3"	1,778,070
	Total:	3,265,997

No rainbow trout are being held over for catchable production.

FISH HEALTH

We eliminated some problems with Costia in the catchables by planting out the #4, or lowermost section, of each of the large raceways as early as possible. These sections show most stress to the fish at all times, thus enabling the Costia to show greater effects. Therefore, making early plants from these fish is the most logical solution.

The small fingerlings inside the hatchery vats showed more symptoms of Costia stress in this season than the previous one. We treated these fish twice at two-week intervals with a calculated Formalin solution. This took care of the Costia problem of fish inside the hatchery.

No other problems were encountered.

FISH RELEASES

Generally, the area received its prescribed quotas and numbers of fish. A few exceptions should be noted. The season, because of the hard winter and heavy snowpack, started out slowly and continued at a greatly-reduced rate until almost mid-July. Most waters in the Salmon River drainage remained high. When the upper Salmon did get in shape to plant, we were then requested to hold up planting operations because of a large number of steelhead smolts in the river providing good fishing. The Big Lost River drainage also continued to run high water until mid-summer. Therefore, when the waters became suitable, they were all ready to plant at once and our services were necessary everywhere. We did get the areas all planted by accelerating our pace for the remainder of the season, but we were just a little behind schedule. Therefore, it was decided due to lateness and apparent lack of fishing pressure, to divert some of the Salmon River fish to Island Park Reservoir, Ririe Reservoir, and to other areas in the state.

Fishing was good in the area and especially good late in the season. Few or no complaints were received from the fishing public.

We planted 123 high mountain lakes from Mackay Hatchery this season. This involved several days of early morning bagging of fingerlings and transporting them to areas to be planted by helicopter. This was an especially busy year this season. Some lakes had not been planted in some time, but we are now caught up somewhat. An average year would be 60 — 80 lakes. The Jet Ranger helicopters now in use for this purpose are an excellent machine. They are suited for the high altitude involved and present a reasonable amount of safety.

Nineteen lakes were planted in regions 3 and 4. These included lakes of the Wood River and Boise River drainages. Sixty-four upper Salmon River drainage lakes were planted. Thirty-three Copper Basin lakes and seven lakes of the Little Lost River were planted. All lakes scheduled to receive fish were planted this year. Rainbow and cutthroat trout fingerlings were planted, with the majority of lakes receiving cutthroat.

The fish planting involved with the Henry's Lake cutthroat was done mostly by diesel tanker trucks and went off smoothly as far as the hatchery involvement was concerned. The large numbers of fish and pounds involved makes this a major hauling project from Mackay to Henry's Lake.

FISH FEED UTILIZED

A total of 195,100 pounds of fish feed was fed this season. We fed Clear Springs trout feed the greater part of the year. We started most fish with Rangen's starter carried over from the previous contract. This fish feed well on the Clear Springs feed and did a good job of converting feed to flesh.

The catchable fish, when they reached a size to eat #6 coarse crumbles, were fed a large portion of their growing period from self-feeders. These feeders were constructed at Mackay Hatchery by the hatchery crew from six-gallon plastic buckets. The fish fed well from these. It seemed that they wasted less feed from self-feeders than they did from hand feeding. We did come to the conclusion that we need at least two feeding stations per section of the large raceways; thus, a total of eight feeders per raceway. When the time arrived that the fish reached sufficient size, we removed the self-feeders and resumed hand-feeding at a reduced rate per one-hundred pounds of fish.

Feed costs for the year totalled $37,081.36. A feed conversion ratio of 1.50 was achieved. The cost per pound of fish produced was $0.19 using only feed costs in cost calculations. Total production costs for the fish reared at Mackay was approximately $1.00 per pound based on total costs for the year.

HATCHERY IMPROVEMENTS

No major improvements were initiated at the hatchery this season; however, a new 1/2 ton pickup was purchased to replace the old one. New, safer, and more efficient lids were installed on the one-ton fish truck.

A replacement electric switchbox was installed for the lawn irrigation pump. The old one was dilapidated, unsafe, would not meet state code, and much in need of replacement.

A shower was installed in House #1. Chimneys were put into houses #1 and #3, and wood stoves were purchased.

Some new screens were built to accommodate small fingerlings in the large raceways. Old screens were repaired.

Lawn and yard improvement and maintenance was an ongoing thing. The hatchery looked good throughout the season.

HATCHERY VISITORS

Usual numbers of visitors visited the hatchery; not as many as in more-populated areas, but considerably more than the previous year.

SPECIAL STUDIES

Some 428,897 fall chinook were reared this season for planting in special lakes throughout the state. It is believed that they will feed upon some of the fingerlings such as small kokanee in Lake Coeur d'Alene thereby reducing the numbers of kokanee and increasing the kokanee size, as well as putting on good growth themselves. These should produce good fishing if things go as planned. Other special lakes **in** the state also received prescribed numbers of chinook. We reared and planted 1,778,070 fingerling cutthroat for the Henry's Lake project. These fish were fed a diet containing terramycin for marking the fish for later identification. Terramycin was added as a 10% additive to the feed. Some fish were examined under a blacklight to check for retention and it was evident that they marked successfully. Feed and terramycin were mixed together in a rented cement mixer, with fish oil used as a binder. The fish were fed this diet for 14 days prior to planting.

Temiscamie and Assinica strains of brook trout were hatched and reared again this year for Henry's Lake.

HATCHERY NEEDS

The need for a cover over the hatchery supply pond still exists. This is needed to cut down on weed growth and moss accumulations in the pond.

The floors in the garage stall need to be concreted. A garage at the superintendent residence would be desirable. The distance of this residence from the existing garage is quite inconvenient.

Deeper vats in the hatchery building are needed to accommodate the large numbers of fry and small fingerlings started and reared at the hatchery.

Additional stacks of Heath incubator trays are becoming a necessity. A new water intake manifold for hatching trays must be installed; the old one is rusting out. Additional valves for increased numbers of tray stacks will need to be added on.

ACKNOWLEDGEMENTS

The hatchery staffing during the year included Robert Vaughn, Fish Hatchery Superintendent II; James McLin, Fish Hatchery Superintendent I; Lynn Watson, Fish Culturist. All of the aforementioned are permanent hatchery personnel. Temporary helper was Willie Wingert. The temporary employee was employed for the three summer months.